CLAIMS

1. A communication system, comprising:

a transmitter, comprising:

an excursion signal generator configured to identify an excursion in a first signal exceeding a threshold; and

an excursion reducer responsive to the excursion signal generator and configured to subtract the excursion from the first signal; and

a receiver configured to receive the first signal.

2. A communication system according to claim 1, wherein the transmitter further comprises a filter system, wherein:

the excursion signal generator is configured to generate an excursion signal corresponding to the excursion;

the filter system is configured to filter the excursion signal; and

the excursion reducer is configured to subtract the filtered excursion signal from the first signal.

3. A communication system according to claim 2, wherein the filter system is configured to filter frequencies outside of a regulatory spectral mask.

4. A communication system according to claim 2, wherein the filter system comprises more than one stage, and wherein each stage is configured to filter a channel of the first signal.

5. A communication system according to claim 4, wherein at least one stage includes a phase correction element configured to compensate for phase changes in the first signal.

6. A communication system according to claim 1, wherein the first signal is a wireless communication signal.

7. A communication system according to claim 1, wherein the first signal is a composite signal comprising a plurality of individual signals.

8. A communication system according to claim 1, wherein the excursion reducer is configured to subtract the excursion signal from the first signal without estimating at least one of a time, a magnitude, or a phase of a signal peak.

9. A communication system according to claim 1, wherein the excursion signal generator is configured to calculate a magnitude of the first signal, compare the magnitude to the threshold, and generate an excursion signal.

10. A communication system according to claim 9, wherein the excursion signal generator is further configured to add a pedestal to the excursion signal.

11. A communication system according to claim 10, wherein a magnitude of the pedestal is calculated according to at least two samples in the excursion.

12. A communication system according to claim 9, wherein the excursion signal corresponds to a difference between a magnitude of the first signal and the threshold if the magnitude of the first signal exceeds the threshold.

13. A communication system according to claim 9, wherein the excursion signal has a duration that is substantially identical to a duration of the excursion.

14. A communication system according to claim 1, wherein the excursion signal generator comprises:

a peak identification system configured to identify a peak in the first signal; and

a waveform generator responsive to the peak identification system and configured to generate the excursion signal according to at least one of the magnitude and the occurrence of the peak.

15. A communication system according to claim 14, wherein the peak comprises a set of three consecutive samples, wherein the middle sample has a higher magnitude than the first and third samples.

16. A communication system according to claim 14, wherein the waveform generator comprises:

a peak response system configured to generate the excursion signal; and

a scaling system configured to adjust the magnitude of the excursion signal.

17. A communication system according to claim 16, wherein the scaling system comprises a storage system storing a lookup table.

18. A communication system according to claim 16, wherein the scaling system is configured to adjust the magnitude of the excursion signal according to the threshold, and wherein the threshold comprises a selected threshold from a plurality of thresholds.

19. A communication system according to claim 16, wherein the scaling system is configured to adjust the magnitude of the excursion signal according to the magnitude of a proximate peak to the peak.

20. A communication system according to claim 19, wherein the proximate peak is defined according to a selected range of samples from the peak.

21. A communication system according to claim 19, wherein the scaling system is configured to adjust the magnitude of the excursion signal according to the relative magnitudes of the proximate peak and the peak.

22. A communication system according to claim 1, wherein the transmitter further comprises a phase compensation system configured to compensate for phase changes in the first signal.

23. A signal processing system, comprising:

an excursion signal generator configured to identify an excursion in a main signal; and

an excursion reducer configured to subtract the excursion from the main signal.

24. A signal processing system according to claim 23, further comprising a filter system, wherein:

the excursion signal generator is configured to generate an excursion signal corresponding to the excursion;

the filter system is configured to filter the excursion signal; and

the excursion reducer is configured to subtract the filtered excursion signal from the main signal.

25. A signal processing system according to claim 24, wherein the filter system is configured to filter frequencies outside of a regulatory spectral mask.

26. A signal processing system according to claim 24, wherein the filter system comprises more than one stage, and wherein each stage is configured to filter a channel of the main signal.

27. A signal processing system according to claim 26, wherein at least one stage includes a phase correction element configured to compensate for phase changes in the main signal.

28. A signal processing system according to claim 23, wherein the main signal is a wireless communication signal.

29. A signal processing system according to claim 23, wherein the main signal is a composite signal comprising a plurality of individual signals.

30. A signal processing system according to claim 23, wherein the excursion reducer is configured to subtract the excursion signal from the main signal without estimating an occurrence of a signal peak.

31. A signal processing system according to claim 23, wherein the excursion signal generator is configured to calculate a magnitude of the main signal, compare the magnitude to a threshold, and generate an excursion signal.

32. A signal processing system according to claim 31, wherein the excursion signal generator is further configured to add a pedestal to the excursion signal.

33. A signal processing system according to claim 32, wherein a magnitude of the pedestal is calculated according to at least two samples in the excursion.

34. A signal processing system according to claim 31, wherein the excursion signal corresponds to a difference between a magnitude of the main signal and the threshold if the magnitude of the main signal exceeds the threshold.

35. A signal processing system according to claim 31, wherein the excursion signal has a duration that is substantially identical to a duration of the excursion.

36. A signal processing system according to claim 23, wherein the excursion signal generator comprises:

a peak identification system configured to identify a peak in the first signal; and

a waveform generator responsive to the peak identification system and configured to generate the excursion signal according to at least one of the magnitude and the occurrence of the peak.

37. A signal processing system according to claim 36, wherein the peak comprises a set of three consecutive samples, wherein the middle sample has a higher magnitude than the first and third samples.

38. A signal processing system according to claim 36, wherein the waveform generator comprises:

a peak response system configured to generate the excursion signal; and

a scaling system configured to adjust the magnitude of the excursion signal.

39. A signal processing system according to claim 38, wherein the scaling system comprises a storage system storing a lookup table.

40. A signal processing system according to claim 38, wherein the scaling system is configured to adjust the magnitude of the excursion signal according to the threshold, and wherein the threshold comprises a selected threshold from a plurality of thresholds.

41. A signal processing system according to claim 38, wherein the scaling system is configured to adjust the magnitude of the excursion signal according to the magnitude of a proximate peak to the peak.

42. A signal processing system according to claim 41, wherein the proximate peak is defined according to a selected range of samples from the peak.

43. A signal processing system according to claim 41, wherein the scaling system is configured to adjust the magnitude of the excursion signal according to the relative magnitudes of the proximate peak and the peak.

44. A signal processing system according to claim 23, wherein the transmitter further comprises a phase compensation system configured to compensate for phase changes in the main signal.

45. An transmitter system, comprising:

an excursion signal generator configured to identify an excursion in a main signal;

an excursion reducer configured to subtract the excursion from the main signal; and

an amplifier configured to amplify the main signal.

46. A transmitter system according to claim 45, further comprising a filter system, wherein:

the excursion signal generator is configured to generate an excursion signal corresponding to the excursion;

the filter system is configured to filter the excursion signal; and

the excursion reducer is configured to subtract the filtered excursion signal from the main signal.

47. A transmitter system according to claim 46, wherein the filter system is configured to filter frequencies outside of a regulatory spectral mask.

48. A transmitter system according to claim 46, wherein the filter system comprises more than one stage, and wherein each stage is configured to filter a channel of the main signal.

49. A transmitter system according to claim 48, wherein at least one stage includes a phase correction element configured to compensate for phase changes in the main signal.

50. A transmitter system according to claim 45, wherein the main signal is a wireless communication signal.

51. A transmitter system according to claim 45, wherein the main signal is a composite signal comprising a plurality of individual signals.

52. A transmitter system according to claim 45, wherein the excursion reducer is configured to subtract the excursion signal from the main signal without estimating an occurrence of a signal peak.

53. A transmitter system according to claim 45, wherein the excursion signal generator is configured to calculate a magnitude of the main signal, compare the magnitude to a threshold, and generate an excursion signal.

54. A transmitter system according to claim 53, wherein the excursion signal generator is further configured to add a pedestal to the excursion signal.

55. A transmitter system according to claim 54, wherein a magnitude of the pedestal is calculated according to at least two samples in the excursion.

56. A transmitter system according to claim 53, wherein the excursion signal corresponds to a difference between a magnitude of the main signal and the threshold if the magnitude of the main signal exceeds the threshold.

57. A transmitter system according to claim 53, wherein the excursion signal has a duration that is substantially identical to a duration of the excursion.

58. A transmitter system according to claim 45, wherein the excursion signal generator comprises:

a peak identification system configured to identify a peak in the first signal; and

a waveform generator responsive to the peak identification system and configured to generate the excursion signal according to at least one of the magnitude and the occurrence of the peak.

59. A transmitter system according to claim 58, wherein the peak comprises a set of three consecutive samples, wherein the middle sample has a higher magnitude than the first and third samples.

60. A transmitter system according to claim 58, wherein the waveform generator comprises:

a peak response system configured to generate the excursion signal; and

a scaling system configured to adjust the magnitude of the excursion signal.

61. A transmitter system according to claim 60, wherein the scaling system comprises a storage system storing a lookup table.

62. A transmitter system according to claim 60, wherein the scaling system is configured to adjust the magnitude of the excursion signal according to the threshold, and wherein the threshold comprises a selected threshold from a plurality of thresholds.

63. A transmitter system according to claim 60, wherein the scaling system is configured to adjust the magnitude of the excursion signal according to the magnitude of a proximate peak to the peak.

64. A transmitter system according to claim 63, wherein the proximate peak is defined according to a selected range of samples from the peak.

65. A transmitter system according to claim 63, wherein the scaling system is configured to adjust the magnitude of the excursion signal according to the relative magnitudes of the proximate peak and the peak.

66. A transmitter system according to claim 45, wherein the transmitter further comprises a phase compensation system configured to compensate for phase changes in the main signal.

67. A method for processing signals, comprising:
identifying an excursion in a main signal; and
subtracting the excursion from the main signal.

68. A method according to claim 67, further comprising:
generating an excursion signal according to the identified excursion; and
filtering the excursion signal, wherein subtracting the excursion includes subtracting the filtered excursion signal from the main signal.

69. A method according to claim 67, wherein filtering the excursion signal comprises filtering frequencies outside of a spectral mask.

70. A method according to claim 67, further comprising compensating for phase changes in the main signal.

71. A method according to claim 67, wherein the main signal is a wireless communication signal.

72. A method according to claim 67, wherein the main signal is a composite signal comprising a plurality of individual signals.

73. A method according to claim 67, wherein subtracting the excursion from the main signal includes subtracting the excursion from the main signal without estimating an occurrence of a signal peak.

74. A method according to claim 67, wherein identifying the excursion includes:

calculating a magnitude of the main signal;

comparing the magnitude to a threshold; and

generating an excursion signal according to the comparison of the magnitude to the threshold.

75. A method according to claim 74, wherein identifying the excursion further includes adding a pedestal to the excursion signal.

76. A method according to claim 75, wherein a magnitude of the pedestal is calculated according to at least two samples in the excursion.

77. A method according to claim 74, wherein the excursion signal corresponds to a difference between the magnitude of the main signal and the threshold if the magnitude of the main signal exceeds the threshold.

78. A method according to claim 74, wherein the excursion signal has a duration that is substantially identical to a duration of an excursion of the main signal beyond the threshold.

79. A method according to claim 74, further comprising identifying a peak in the first signal, and wherein generating the excursion signal comprises generating the excursion signal according to at least one of the magnitude and the occurrence of the peak.

80. A method according to claim 79, wherein the peak comprises a set of three consecutive samples, wherein the middle sample has a higher magnitude than the first and third samples.

81. A method according to claim 74, further comprising adjusting the magnitude of the excursion signal according to the threshold, and wherein the threshold comprises a selected threshold from a plurality of thresholds.

82. A method according to claim 74, further comprising adjusting the magnitude of the excursion signal according to the magnitude of a proximate peak to the peak.

83. A method according to claim 82, wherein the proximate peak is defined according to a selected range of samples from the peak.

84. A method according to claim 82, wherein adjusting the magnitude of the excursion signal includes adjusting the magnitude of the excursion signal according to the relative magnitudes of the proximate peak and the peak.

85. A method according to claim 67, further comprising compensating for magnitude changes in the main signal.